IN THE CLAIMS

The status of each claim in the present application is listed below.

Claims 1-12: (Canceled).

13. (New) A process for producing high-purity silicon, comprising thermally decomposing a gas phase mixture comprising monosilane and a monochlorosilane, and depositing massive silicon.

14. (New) The process as claimed in claim 13, wherein the gas phase mixture further comprises one or more additional silanes.

15. (New) The process as claimed in claim 13, wherein the gas phase mixture comprises from 10 to 60% by weight of monosilane, from 10 to 60% by weight of monochlorosilane and from 0 to 15% by weight of further silanes, where the silanes present in the gas mixture add up to 100% by weight.

16. (New) The process as claimed in claim 13, wherein the gas phase mixture comprises monosilane and monochlorosilane together with at least one further silane selected from the group consisting of dichlorosilane and trichlorosilane.

17. (New) The process as claimed in claim 13, wherein the gas phase mixture is obtained in a partial condensation after a dismutation of trichlorosilane.

18. (New) The process as claimed in claim 13, wherein the thermal decomposition and deposition is carried out at a temperature in a range from 600 to 1250°C.

19. (New) The process as claimed in claim 13, wherein the thermal decomposition and deposition is carried out at a pressure of from 1 mbar abs. to 100 bar abs.

20. (New) The process as claimed in claim 13, wherein the process is carried out continuously.

21. (New) The process as claimed in claim 13, wherein the process is carried out in a decomposition/deposition apparatus.

22. (New) The process as claimed in claim 13, wherein a silane-containing feed mixture is stored as liquid or gas in an intermediate storage and supplied to the decomposition/deposition apparatus.

23. (New) The process as claimed in claim 22, wherein at least one additional gas selected from the group consisting of hydrogen, nitrogen and noble gas is added to the silane-containing feed mixture before the gas mixture is fed to the decomposition/deposition apparatus.

24. (New) The process as claimed in claim 22, wherein at least part of an offgas from a decomposition/deposition apparatus is added to the silane-containing feed mixture.

25. (New) The process as claimed in claim 21, wherein a tube reactor or a fluidized-bed reactor is used as the decomposition/deposition apparatus and the thermal decomposition and deposition is carried out on solid pieces of silicon.

26. (New) The process as claimed in claim 13, further comprising producing the gas phase mixture from a dismutation of trichlorosilane and then thermally decomposing the gas phase mixture to deposit the massive silicon.

27. (New) The process as claimed in claim 26, wherein the gas phase mixture is obtained at a top of a reactive rectification column.

28. (New) The process as claimed in claim 13, wherein the gas phase mixture comprises from 10 to 50% by weight of monosilane, from 10 to 50% by weight of monochlorosilane and from 0 to 15% by weight of further silanes, where the silanes present in the gas mixture add up to 100% by weight.

29. (New) The process as claimed in claim 13, wherein the thermal decomposition and deposition is carried out on a silicon wire, rod, tube or cup.

30. The process as claimed in claim 13, which produces a small amount of hydrogen chloride and also produces very small dust particles, wherein the dust particles are dissolved by the hydrogen chloride